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THE PURSUIT OF SCIENTIFIC TRUTH IN THE INTELLECTUAL CENTERS OF THE GREEK ENLIGHTENMENT PERIOD

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ABSTRACT

The continuous scientific quest for truth is a timeless question posed by humanity since the time people began living in organized societies, seeking a better understanding of the environment and the phenomena around them. With knowledge, we can foresee the future and acquire powerful tools to face the challenges of daily life and society, as well as to solve complex problems.

Without the scientific approach, societal progress is impossible. Science encourages critical thinking and the constant effort for improvement and innovation, contributing to the development of a more informed and progressive society.

This paper attempts to highlight the importance of experimentation, visual aids, and measurement in the progress of science. It examines how science was shaped from the Renaissance and reached its peak in Europe during the period of the European Enlightenment. This era exerted significant influence on the intellectual activity of the Greek Enlightenment. The paper points out how experimentation, visual aids, and measurement contributed to the advancement of knowledge. It also discusses the development of new theoretical and practical approaches in physics, mathematical sciences, and other scientific fields.

Furthermore, it seeks to underscore the role of science as the primary means for the pursuit of truth and knowledge, as well as the dynamic exhibited by humanity, emancipated from religious dogmatism, thereby enhancing the intellectual evolution of humanity and scientific progress. Finally, it emphasizes the continuous connection and mutual influence between traditions and contemporary scientific developments, as well as the importance of the educational process in promoting scientific knowledge and critical thinking in society.

Keywords: Science and education, research in the Renaissance, education in the European Enlightenment, physical sciences in the Greek Enlightenment

1.0 INTRODUCTION

Science, as a field of knowledge and action, was not merely a means of understanding the world but served as the starting point for the radical restructuring of the values and structures of human society. From the Renaissance onwards, it stood against established ecclesiastical doctrines,

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questioning truths that for centuries had relied exclusively on religious perception. Through experimentation and systematic observation, scientists introduced a profoundly subversive way of understanding the natural and social world, grounded in logic and empirical evidence. This approach was not just an alternative view of reality but the starting point for deconstructing dogmas founded on ecclesiastical authority. Science, with its persistent quest for truth, liberated thought from traditional constraints, paving the way for a freer, more rational perception of the world. The confrontation with established worldviews was not merely a conflict but a profound spiritual impetus that activated new forces within society.

The Greek Enlightenment, influenced by the philosophical and scientific currents of Western Europe, embraced the challenge of highlighting knowledge as a lever for spiritual and social emancipation. Thus, truth and knowledge acquired an existential dimension, guiding the evolution of humanity and society toward new moral and spiritual values.

The intellectual revolution created new prospects not only in European thought but also in the Greek spiritual renaissance of the Enlightenment. Science was no longer confined to a simple method of understanding the human world but transformed into an ethical force capable of determining social and moral values. Experimentation, a symbol of this new direction, became the foundation for the pursuit of truth and the redefinition of human identity.

The process of scientific thought was fundamental to the reconstruction of the Greek Enlightenment, promoting new forms of social organization and enhancing rationalism, freedom of thought, and the continuous evolution of knowledge. The pursuits of Greek Enlightenment thinkers acted as a catalyst for recognizing truth and knowledge as existential values critical for the spiritual and social advancement of the individual and Greek society. Within the framework of theocratic interpretations of truth and Ottoman authoritarian rule, the ideas of the Enlightenment offered an innovative prospective. The Greek Enlightenment contributed to the liberation of thought and the cultivation of a liberal spirit, which strengthened social justice and the freedom of knowledge, leading society toward a new era of progress and spiritual renaissance.

2.0 REEVALUATION OF EUROPEAN THOUGHT

Western Europe was transformed as the monopolistic position of the church as the sole source and guarantor of truth was challenged by an environment where intellectual curiosity could flourish and lead to new forms of knowledge and methodology. The Reformation of the 16th century not only changed the religious landscape in the West, questioning the traditional values and knowledge established by the church, but also created an environment favorable to intellectual curiosity and the development of new forms of knowledge and methodology. People began to seek truths beyond dogmatic teachings, and intellectual curiosity led to the development of experimental learning and the scientific method (Weeks, 1985). Scientists of this era were no longer constrained by religious doctrines but were free to observe, experiment, and conclude based on evidence (Durant, 1953).

A dynamic developed that led to the formation of a new conception of truth, based on the transformation of knowledge. People began to seek new forms of understanding, outside the strict

and dogmatic boundaries set by the Church. Scientific progress clashed with social reality, igniting revolutions and disrupting traditional social structures, making visible the formation of a new social truth, distanced from the traditional perceptions of the Church.

The evolution of intellectual conquest marks an unstoppable and almost predetermined course. A characteristic image of this change is the painting by Juan Luis Vives, where Hercules frees Prometheus, a symbol of human knowledge and inventiveness. Vives's inspiration is a powerful allegory for the liberation of human thought from the shackles of ignorance and superstition, with Hercules's act symbolizing the release of this force and the reevaluation of knowledge through scientific methodology (Russ, 1995). The path for what we today call Science had been paved (Majumbar, 2023)!

Significant changes in the field of science shifted the focus toward understanding and codifying natural forces, the human body and mind, and the universe. The spirit of inquiry created the necessary conditions for the development of the scientific revolution and contributed to shaping the concept of modern science, which is based on method and empirical knowledge (Moran, 2005).

One of the significant exponents of this new approach was Francis Bacon. He is considered one of the founders of the scientific method, arguing that knowledge should be based on empirical evidence and experiments, instead of the sterile logic that dominated medieval thought (Ball, 2004). Bacon criticized traditional methods and promoted systematic observation and experimentation as the foundations of scientific research.

Similarly, Pierre Gassendi opposed Aristotle's teachings and advocated experimental research, significantly contributing to the evolution of modern science by focusing on observation and experimentation (Beckwith, 2003).

Galileo also expressed opposition to the traditional cosmological views imposed by the church. His observations and experiments contributed decisively to the foundation of modern astronomy and physics and led him to an inevitable conflict with the church, which accused him of heretical views. His opposition underscores the clash between new scientific knowledge and traditional ecclesiastical truth (Biagioli, 1993).

Finally, Johannes Kepler, known for his laws of planetary motion, significantly contributed to the understanding of the solar system and confirmed Copernicus's theories. Kepler's work, based on strict mathematical analyses and observations, became a model for future scientific research (Henry, 2008).

Kepler also opposed the church's cosmic view, trying to interpret the laws of planetary motion and the solar system based solely on strict mathematical analyses and observation, thus confirming Copernicus's theories (Henry, 2008).

The revolutionary nature of scientific change was perceived through the achievements and methods of those who laid the foundations of modern science. The enduring contradictions of

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human experience emerged between new knowledge and entrenched perceptions, radically transforming human understanding of the world. On one hand, science and art promote freedom of thought and liberation from the bonds of ignorance. On the other hand, ecclesiastical authority makes continuous efforts to control and limit the production of knowledge, seeking control of truth and suppression of any form of subversion. The constant struggle between the light and shadow of knowledge becomes a mirror of humanity's deeper fears and hopes. Foucault (1994) reminds us that every knowledge hides a form of power, and the conflicts of that era were not merely battles for religious correctness but for the control of the human mind and social reality. Thus, the endless pursuit of truth, whether through the scientist's microscope or sacred texts, seems to be the very essence of the human adventure. It constitutes a confrontation between understanding the world and interpreting it in terms we create.

3.0 THE RENAISSANCE OF INTELLECT IN EUROPE

The war for the dominance of ideas had taken its own course. The understanding of natural forces and their codification were no longer drawn from some priesthood but were the result of scientific documentation. Aspects of this intellectual war included the clash between new scientific knowledge and traditional ecclesiastical truth. Despite the progress of science, the Enlightenment thinkers did not completely reject divine existence. The idea of God as the absolute source of life and the argument that God endowed humans with rational capacity were widely accepted. Philosophers like John Locke and Isaac Newton supported the existence of a divine creator who set natural laws in motion (Locke, 1690; Newton, 1687).

Locke, in his work "An Essay Concerning Human Understanding" (1690), promoted the idea that human intellect is a gift from God and that God is the absolute source of life and knowledge. Newton, on his part, in his work "Principia Mathematica" (1687), described the natural laws governing the universe but also stated that these laws had been set in motion by a divine creator. While there was initially fear and caution against directly challenging the church, the continuous development of science and the establishment of new scientific assumptions gradually weakened ecclesiastical authority, overturning social and institutional structures and creating the path for new scientific and philosophical approaches to reality.

The belief that people could and should learn much more about the world boosted intellectual progress, which was achieved mainly through experimentation, observation, and rationalism. The domain of scholarship did not function merely as a system that accepted and transmitted knowledge but researched it, sought it, and developed new ideas and knowledge.

The physician Hermann Boerhaave encouraged his students to conduct experiments and examine phenomena with scientific methodology to reflect, investigate the causes of each disease, and discover the truth through observation and experiments (Powers, 2012).

The Medical Academy of Spain focused education on medicine and surgery through observation and experience. The first doctor who introduced the empirical approach and immediate diagnosis

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of disease symptoms was Juan José Cazalla. He used this method to describe the symptoms of pellagra, differentiating it from other diseases like scabies and leprosy (Hays, 2005).

Medicine was also the field where Daniel Bernoulli, nephew of Jacob Bernoulli, used the science of statistics and probability calculus to evaluate the effectiveness of the smallpox vaccine. He studied the risk of death resulting from vaccination versus the risk from the natural progression of smallpox. By creating tables to demonstrate the advantages of vaccination during infant development, he aimed to drastically reduce the number of deaths (Plotkin et al., 2017). He also conducted experiments related to the flow of fluids and the relationship between pressure and fluid velocity. By inserting a tube into a fluid under pressure and measuring the pressure at that point, he concluded that the fluid behaves differently depending on the pressure it has. Thus, he was able to calculate the blood flow velocity and pressure at various points in the cardiovascular system. He studied blood flow by piercing the wall of a tube and inserting a pointed straw with open ends (Moore & Owens, 2013).

As medicine began to rely on scientific research and observation, moving away from traditional religious beliefs, the Church's influence in the field of health began to wane, while the authority of state and institutional bodies was strengthened. The Church, which traditionally played a central role in patient care and health management, lost its influence as medical knowledge and practice became increasingly oriented toward science and less toward religion. As Foucault points out, from the 17th century, medicine evolved into a tool through which institutions began to control and regulate people's lives. While the Church tried to soothe people's concerns about death, medical science focused on life management. The application of scientific knowledge in medicine and public health had significant social impacts, allowing institutions to influence and manage the human body and life. States recognized medical science as a tool for improving public health and controlling the population, proceeding with measures to prevent epidemics and improve hygiene conditions (Foucault, 2008).

The new inventions of the microscope and telescope opened two vast worlds for researchers and scientists, that of the microcosm and that of the universe. Robert Hooke was one of the first scientists to use the microscope to observe the structure of plants. In 1665, in his work "Micrographia," he described and illustrated various plants and other structural details using a prototype microscope. He was the first to use the word "cell" to describe the architecture of microscopic organisms, significantly contributing to the development of microscopy and the understanding of cellular structure. Additionally, he analyzed fossils and other natural structures, posing questions and observations about the nature and properties of these fossils and promoting knowledge in the sciences of geology and paleontology of his time (Hooke, 1665).

The astronomer William Herschel, observing the universe with a telescope, discovered something new. After observing and calculating its orbit, he realized it was a new planet, previously unknown, thus expanding the boundaries of our solar system. This planet was later named Uranus after his death (Hoskin, 1981). Another young astronomer of the era known for many discoveries and observations in astronomy and physics, including his research on stellar motion and planetary observations, is Edmond Halley. One of his most significant observations was predicting the return

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of the comet that now bears his name, Halley's Comet. After analyzing historical comet observations and their orbits, he concluded that this comet returns approximately every 76 years (Halley, 1705).

During the Enlightenment period, teaching inevitably followed the trend of the times and underwent significant changes due to the intense surge of discoveries and scientific research that then shaped the intellectual and educational atmosphere. Telescopes and microscopes were extensively used, and new visual aids and teaching methods were introduced to enhance students' educational experience. The lesson evolved into a more open and practical experience, making the educational process more exciting, accessible, and understandable for the students of the time. The use of visual aids, such as images and models, helped illustrate and explain difficult concepts, while also facilitating the learning process for students.

Visits to the Paris Botanical Garden were common for the Lycée Louis-le-Grand, which students sought to study and understand botany and the variety of plants. The school integrated the use of globes, maps, and visits to the botanical garden to offer a comprehensive understanding of the natural world, combining theory with practical experience (Klemm & Weiss, 2018).

In many other educational institutions, teachers and philosophers used telescopes to show students astronomical phenomena, such as planetary movements, constellation observation, and the concept of the Earth's elliptical orbit around the Sun. Many educators used microscopes to present to students the microscopic structure of plant and animal cells and microorganisms, explaining the importance of cell theory in biology and medicine. Particularly popular were experiments that allowed students to train in the methodical approach of scientific research, conducting measurements such as gravity or analyzing the distance and speed of objects (Harland, 2016).

4.0 EUROPEAN ENLIGHTENMENT AND GREEK EDUCATION

The example of "enlightened Europe" guided all progressive currents of the new Hellenism and acquired pioneering significance. The awareness that Greece is an integral part of Europe is growing and the desire to join the current of Western European culture is emerging. This new ideology encounters strong resistance from the supporters of "enlightened despotism," with the church opposing this new trend from the beginning, considering it a threat to the Christian faith.

This division led to skepticism and hostility from the leading forces towards any bearer of new philosophical ideas, with the latter taking the initiative to organize intellectual forces by establishing intellectual centers with many high-level and low-level institutions. The traditional education promoted by the Church focused on religious teaching and the study of ancient texts, rejecting the innovative ideas of the Enlightenment as a threat to the faith and morality of students (Svoronos, 2004).

Kuhn would recognize that the development of knowledge in Greek education did not follow a linear path but progressed through revolutions, during which the established system of beliefs and methods was overturned by a new one. During the Neo-Hellenic Enlightenment, the dominant

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system of traditional education, rooted in religious teaching, was challenged by the rational and scientific model of knowledge (Kuhn, 2012).

The European Enlightenment, with its ideas for the promotion of knowledge and reason, had a significant impact on Greek education during the period of Ottoman rule. Apart from the traditional type of school operating under the direct or indirect influence of the official Church, a new school is proposed that can respond to contemporary social and national needs.

The operation of the school, which was under the responsibility and vigilant supervision of the church, was characterized by strictness and discipline, while the teaching program mainly included ecclesiastical texts as reading materials. Teaching took place with students sitting on mats, hides, or carpets and the teacher on a stool at the podium, while the first desks in a school were introduced in Wallachia by Georgios Gennadios. A common teaching method was with the tablet, a small slate that the student held in the left hand and spelled out letters or syllables, pointing to them with the right hand. Students would recite the alphabet many times all together, saying one letter from the beginning and one from the end of the alphabet, always under the strict supervision of the teacher, who held a rod to enforce order in case of noise. Moreover, disciplining students was considered necessary according to the church's clerical texts, which believed that the use of force was a means to correct students' behavior and cultivate discipline and morality (Evangelidis, 1936).

The church resisted the new ideas of the Enlightenment thinkers regarding education, as the new model promoted a different worldview. As the sole spiritual and authoritative body in the Greek-speaking society of the Ottoman Empire, the Church used traditional education to maintain its hegemony, imposing a specific way of thinking and living. The Enlightenment movement sought to redefine knowledge based on science and rational thought, thus questioning existing power structures.

The perception that corporal punishment could function as a means of eradicating sin was widespread in the West as well, as the Catholic Church adopted it as a practice of purification. It believed that students had to undergo corporal punishment to rid themselves of sinful tendencies and rectify their moral course. Discipline through beating aimed at cleansing from sin and enhancing spiritual development. In any case, corporal punishment was associated with moral and spiritual education, considering it a vital tool for achieving moral virtue and discipline (Foucault, 1977).

The thinkers of the Enlightenment deeply influenced the perceptions and practices of the educational system of the time, changing the perception of corporal punishment and education by emphasizing the value of reason, individual freedom, and human dignity (Outram, 2013).

The liberal ideology of the West pushed Greek scholars to establish schools and spread Greek education in the Greek area under Ottoman rule. Schools established in cities with a predominantly Greek Orthodox population enjoyed autonomy in their operation, due to their distance from the strict supervision of the Patriarchate. However, it was not possible for them to completely avoid

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its influence, since their operation required its approval, which was formalized with the patriarchal seal.

In the educational system, a shift towards the operation of schools was observed, emphasizing teaching and applying modern pedagogical methods. Education using experiments and educational materials, enriching content, and establishing a library define these characteristics that distinguish the Enlightenment (Vakalopoulos, 1990). Intellectuals devoted themselves with passion to writing, translating, and publishing books, with textbooks becoming known in the Greek area almost simultaneously with the original writings in English, French, German, and Italian.

Experimental methodology is one of the fundamental innovations of the era in education. Instead of relying solely on theoretical teaching, educators used experiments to show students how scientific principles work in practice. The experiments conducted in schools included a variety of physical phenomena and chemical reactions. Educators used simple and understandable experiments to explain basic scientific principles. For example, light refraction using glass prisms, the falling of bodies to help students understand gravity, and chemical reactions with simple chemical experiments to grasp the basic principles of chemistry (Koumas, 1808).

Besides experiments, instructors used simple scientific instruments to enhance their teaching. The construction and use of the pendulum helped students understand the principles of motion and time, vacuum pumps were used to explain the properties of air and pressure, while other simple mechanisms allowed students to closely see how physical principles work (Kavarnos, 1985).

The teaching of geography evolved as it was enhanced with the use of significant tools introduced into education, such as geographical maps. These tools helped students understand global geography, the locations of countries and continents, as well as the historical evolution of these areas. Maps were also used for teaching historical events, giving students a visual representation of historical developments. Globes were used to explain the movements of planets and stars, as well as the basic principles of astronomy. To better understand the shape, movement, and land and sea distribution of the Earth, it is suggested that students have the globe in front of them during the lesson (Popovits, 1802). Students had the opportunity to see the representation of the Earth and other celestial bodies, better understanding the Earth's position in the solar system and the movements of planets around the Sun (Paranikas, 1885). Although Voulgaris, in his work "On the System of the Universe," tries to argue in favor of accepting the system as presented by Ptolemy, he ultimately ends up in an intermediate acceptance, that of Tycho. His work is particularly educational, as it emphasizes the importance of methodology for studying and understanding natural problems concerning the then-known universe (Voulgaris, 1805). Benjamin of Lesbos was fascinated by the telescopic discoveries taking place in the West, which he included in his teaching in Kydonies, Smyrna, Bucharest, and Iasi (Karas, 1992).

The introduction of real objects, such as animals, flowers, and rocks, into the educational process constituted an innovative approach to teaching natural sciences. Students had the opportunity to explore these objects up close, observe them, and understand their characteristics through direct contact. Teachers could bring various types of flowers into the classroom to teach botany, while

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students had the chance to observe the structure and characteristics of plants up close. The presence of animals in the classroom allowed students to study biology and animal behavior, while rocks and minerals were used to teach geology and the Earth's composition (Vlahakis et al., 1992).

Experimental methodology marks a fundamental shift in education and science, replacing the memorization of theories and doctrines with an approach that encourages students to question and discover knowledge through personal experience and observation. The new educational model introduced by the Enlightenment offered a way of understanding the world based on evidence and logical analysis, differing from the theoretical approach of traditional education. This change challenged the dominance of traditional educational institutions and the Church, which until then held the monopoly on knowledge transmission. The use of experiments allowed students to discover the truth through their personal experience, creating a new form of authority based on evidence rather than dogmatic authority.

5.0 CRITICAL VIEW -CONCLUSIONS

Scientific teaching in the Greek area in the 18th and 19th centuries was shaped under the influence of European currents and ideas, as Europe was experiencing an era of scientific revolution and philosophical transformations. Education in Greece, while initially following traditional values and the needs of the society of the time, giving a central role to religion and tradition, soon followed the European trend of modernization. During the 18th and 19th centuries, an emergence of new educational practices that enhance scientific learning and seek to incorporate contemporary scientific theories and methods prevailing in Europe is observed. Specifically, the introduction of natural objects into teaching, such as animals, flowers, and rocks, was an innovation that allowed students to learn through direct contact and observation. The reform of Greek education was achieved by introducing innovative practices that highlighted the importance of experimentation and direct experience as basic tools for understanding nature. Thus, a comprehensive educational framework was created that combined empirical observation and rationalism with the timeless values of Greek society. It promoted a new approach to knowledge that responded to the demands of scientific progress while maintaining the character of fundamental principles.

The connection of the Greek educational system with European developments also encouraged the translation and dissemination of foreign-language scientific and philosophical texts. The introduction of educational material from Europe was crucial for education, as it expanded knowledge and access to contemporary scientific discoveries and theories. Translations of philosophical and scientific texts allowed educators to teach modern ideas and promote a different perception of science, structured on rational thought and empirical knowledge. Additionally, printed material from Europe contributed to the continuous progress of sciences in the Greek area, encouraging scientific research and the development of new educational practices. Thus, within the context of the intense publishing activity of the era, where many books with a modern spirit were written, it is not surprising that Dimitrios Darvaris authored a book for children aged seven to ten, aiming to stimulate their curiosity about nature. This book, as one easily concludes from the title, was specifically intended for "private or home teaching of small children and girls," as Darvaris had undertaken to teach his nieces at home (Darvaris, 1810).

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The educational renaissance, manifested due to the rise of the bourgeois class, developed in various urban centers such as Ioannina, Smyrna, Chios, Moschopolis, Bucharest, and many others. The intellectual centers that functioned as beacons and intellectual cores were numerous. Scholars, scientists, and teachers aligned with the European standards of the time, emphasizing the widespread dissemination of knowledge, intellectual awakening, and the enhancement of the people's intellectual cultivation. Educational reform undertook the role of national reconstruction, primarily serving the mandates of national liberation and ethnocentrism. However, it also incorporated power strategies that strengthened the social position of the bourgeois class and rearranged the social structure. The dynamic they showcased was exceptional, as Hellenism was under Ottoman rule, which neither encouraged nor discouraged intellectual initiatives but remained inactive and indifferent to the revolutionary ideas developing in sciences in Europe.

The intellectual person sought to understand and explain natural laws without resorting to supernatural causes, placing humans as part of the natural world and trying to understand themselves. Through scientific understanding and the conceptual capacity of the human mind, they aimed to ensure the happiness of earthly life, focusing on the diversity of nature, to which they belong, instead of dealing with the afterlife, which the mind can neither perceive nor understand. The search for secular answers was not only a philosophical stance but also a strategy of social reform. Foucault points out that scientific knowledge and the understanding of natural laws are linked to the power structure of the time. Moving away from supernatural causes and focusing on natural processes incorporates strategies that lead to social progress and control. With the development of scientific understanding, new forms of knowledge shape social structures and forms of power, highlighting humans as a conscious part of the natural world and not merely as an entity subject to supernatural forces.

The transition from metaphysical to natural explanations constitutes a scientific revolution, as progress in science is achieved by overturning old assumptions and establishing new scientific standards. In the case of the intellectual person, the turn towards studying nature and recognizing the human mind's ability to understand and analyze natural phenomena marks a radical change in scientific thought, abolishing traditional metaphysical approaches and introducing new scientific and philosophical directions.

The era of reevaluating European identity and thought, as well as the scientific methodology developed in Europe since the Renaissance, formed the basis for rapid developments in sciences in Europe. The transition from ecclesiastical truth to scientific research and experimentation led to a series of revolutionary discoveries and theories that radically changed the understanding of the natural world and improved human life. The Enlightenment emerges as a critical chapter in human history, which continues to positively influence modern society and provide guidelines for its future course. The connection of the Greek spirit with contemporary scientific developments in Europe prevented isolation and encouraged the scientific development of the Greek scientific field towards scientific progress.

The European scientific and philosophical movement also created new challenges and questions, especially in the natural sciences, which continue to influence modern scientific thought and

research. Modern understanding of science and technology recognizes that social and ideological forces play a decisive role in the process of scientific creation and evolution. Science is not merely a neutral tool for discovering truth but is directly connected to the social conditions and political ideologies of the time. Scientific theories and technological innovations are not detached from social dynamics but draw from them and incorporate prevailing ideologies and power structures.

Modern scientific research must adopt a critical approach that recognizes and analyzes the influence of social forces in shaping science and technology. Recognizing that science and technology evolve within a social and political context underscores the need for continuous revision and self-awareness in scientific practice. Creating such a framework requires a careful examination of the interaction between social factors and scientific development to ensure a balanced and critical understanding of progress and innovation.

The concepts of logic, scientific observation, and experimental method hold central significance in Western philosophy. Furthermore, philosophy promotes the idea of free and rhetorical thought as a means for social change and the progress of humanity. However, modern understanding of science recognizes that, although science aims to discover truth through objective methods, it is not entirely independent of the social and ideological forces that shape the context within which it develops. Therefore, prevailing social conditions and political ideologies may influence the direction and nature of scientific truth.

The future of science and our societies requires a more thorough and critical analysis of the relationships between social factors and scientific development. Recognizing this complex interaction outlines a new direction for modern scientific thought, where free and rhetorical thinking, combined with social and philosophical approaches, can contribute to shaping a stronger and more critical scientific practice.

In a modern social environment, integrating different cultural approaches and democratic principles into the scientific and educational process is deemed necessary. Recognizing that science and technology are influenced by social forces and ideologies prescribes the need for a critical approach that combines scientific progress with democratic and multicultural sensitivity. The importance of these educational approaches for today is multifaceted. On one hand, they help students better understand the natural sciences, promoting scientific literacy and critical thinking. On the other hand, they keep alive the connection with the tradition and history of the educational process.

In a constantly changing world, promoting multiculturalism and democratic participation in shaping science and education emerges as a critical challenge. In this direction, the concept of rational thinking, open pursuit of knowledge, and strengthening social and individual freedom play a decisive role. These values, historically highlighted by promoting scientific progress and social change, continue to provide the basis for modern thought and practice.

The future direction of science and our society must incorporate a continuous critical revision of the relationships between scientific evolution, social forces, and democratic values. Ideas that

support the promotion of critical thinking, open discussion, and integration of different cultural approaches are fundamental for developing a healthy and creative scientific environment. Only by applying these values can we ensure a strong and resilient foundation for the progress and prosperity of humanity in the multicultural and democratic environment of the future.

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